

CLAIMS

1. A method of forming a shaped article having a matrix containing sintered fly ash, said method comprising the  
5 steps of:  
    blending fly ash together with water to produce a fly ash dough, the water being added in excess of that which is absorbed by the fly ash so that the dough contains free water so as to be in at least a partially fluid state;  
10     forming a green article in a desired shape from the fly ash dough,  
    removing at least a portion of the free water from the fly ash dough during and/or after forming of the green article; and  
15     subsequently firing the green article so that the shaped article is hardened by sintering its fly ash matrix.
2. A method according to claim 1, wherein a plasticiser is blended with the fly ash and water to produce the fly  
20 ash dough.
3. A method according to claim 1, further comprising the step of curing the green article before it is fired, wherein during curing the water reacts with the fly ash so as to at least partially solidify the article.
- 25 4. A method according to claim 3, wherein during the curing of the green article, at least a portion of the free water is removed from the fly ash dough.
5. A method according to either claim 4, wherein the green article is subjected to low to moderate heating  
30 during curing.
6. A method according to claim 5, wherein the

green article is subjected to heating in a temperature range of 30°C to 80°C, and more preferably in the range of 55°C to 65°C.

7. A method according to claim 5, wherein the article is subjected to heating in a temperature.

8. A method according to claim 5, wherein the green article is subjected to elevated humidity during curing.

9. A method according to claim 8, wherein the humidity is in the range of 20% relative humidity to 60% relative humidity.

10. A method according to claim 8, wherein the humidity is in the range of 35% relative humidity to 45% relative humidity.

11. A method according to claim 1, wherein after removing as least a portion of the free water from the fly ash dough, the moisture content in the dough is in the range of 1 to 5%.

12. A method according to claim 1, wherein after removing at least a portion of the free water from the fly ash dough, the moisture content in the dough is in the range of 2 to 4%.

13. A method according to claim 3, wherein the curing time is in between 12 hours to 5 days.

14. A method according to claim 3, wherein the curing time is between 1 and 3 days.

15. A method according to claim 1, wherein the firing temperature is in the range of 1000°C to 1300°C.

16. A method according to claim 1, wherein the firing temperature is between 1100°C and 1250°C.

17. A method according to claim 16, wherein the duration of firing is in the range of 30 minutes to 6 hours.

18. A method according to claim 16, wherein the duration of firing is between 1 to 4 hours.

19. A method according to claim 1 , wherein the green article is a building brick and the firing temperature is in the range of 1100°C to 1250°C.

20. A building element having a matrix of sintered fly  
5 ash and having a compressive strength of greater than 30 MPa, a modulus of rupture greater than 5 Mpa, an initial rate of absorption (IRA) of between 0.2 to 5 kg/m<sup>2</sup>/min and an absorption capacity of between 5-20%.

21. A building element according to claim 20 , wherein  
10 the building element is a building brick.

22. A building element according to claims 20, when made by a method according to claim 1

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